

WHAT IS CLAIMED IS:

1. A transmission diversity detection circuit for notifying presence or absence of a transmission diversity of spread spectrum communication by modulation of SCH (Synchronization channel), comprising:

arithmetic means for calculating a calculated value of  $C_{2n,0} \times S_{2n,0}^* + C_{2n,0}^* \times S_{2n,0} + C_{2n,1}^* \times C_{2n,1}$ ,

in first and second symbols in a predetermined number of series of slots with respect to a reception signal, taking a primary CPICH (common pilot channel) symbol with respect to said first symbol as  $C_{2n,0}$ , a SCH symbol with respect to said first symbol as  $S_{2n,0}$ , a primary CPICH symbol with respect to said second symbol as  $C_{2n,1}$  and a SCH symbol with respect to said second symbol as  $S_{2n,1}$ ;

taking a complex conjugate of said primary CPICH symbol  $C_{2n,0}$  as  $C_{2n,0}^*$ , a complex conjugate of SCH symbol  $S_{2n,0}$  as  $S_{2n,0}^*$ , a complex conjugate of said primary CPICH symbol  $C_{2n,1}$  as  $C_{2n,1}^*$  and a complex conjugate of said SCH symbol  $S_{2n,1}$  as  $S_{2n,1}^*$ ; and

judgment means for making judgment whether transmission diversity is present or not depending upon positive or negative of said calculated value.

2. A transmission diversity detection circuit as set forth in claim 1, wherein said arithmetic means comprises:

circuits for deriving said complex conjugate  $C_{2n,0}^*$  of said

primary CPICH symbol  $C_{2n,0}$ , a complex conjugate  $S_{2n,0}^*$  of SCH symbol  $S_{2n,0}$ , a complex conjugate  $C_{2n,1}^*$  of said primary CPICH symbol  $C_{2n,1}$  and a complex conjugate  $S_{2n,1}^*$  of said SCH symbol  $S_{2n,1}$ ;

multipliers calculating  $C_{2n,0} \times S_{2n,0}^*$ ,  $C_{2n,0}^* \times S_{2n,0}$  and  $C_{2n,1}^*$   
5  $\times C_{2n,1}$ ; and

an adder calculating a sum of  $C_{2n,0} \times S_{2n,0}^* + C_{2n,0}^* \times S_{2n,0}$   
+  $C_{2n,1}^* \times C_{2n,1}$ ,

said judgment means makes judgment whether transmission  
diversity is performed or not depending upon positive or negative  
10 of sign of said sum.

3. A transmission diversity detection circuit as set forth  
in claim 1, wherein said predetermined slot is even numbered  
slots in one frame, said first and second symbols are (0)th  
15 and first symbols of said slot.

4. A transmission diversity detection circuit as set forth  
in claim 1, wherein said arithmetic means performs arithmetic  
operation upon performing communication.

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5. A transmission diversity detection circuit as set forth  
in claim 1, wherein said arithmetic means performs arithmetic  
operation upon registration of position for communication.

25 6. A transmission diversity detection method for notifying

presence or absence of a transmission diversity of spread spectrum communication by modulation of SCH (Synchronization channel), comprising:

calculating step for calculating a calculated value of  
5  $C_{2n,0} \times S_{2n,0}^* + C_{2n,0}^* \times S_{2n,0} + C_{2n,1}^* \times C_{2n,1}$ , in first and second symbols  
in a predetermined number of series of slots with respect to  
a reception signal, taking a primary CPICH (Common pilot channel)  
symbol with respect to said first symbol as  $C_{2n,0}$ , a SCH symbol  
with respect to said first symbol as  $S_{2n,0}$ , a primary CPICH symbol  
10 with respect to said second symbol as  $C_{2n,1}$  and a SCH symbol with  
respect to said second symbol as  $S_{2n,1}$ , and taking a complex  
conjugate of said primary CPICH symbol  $C_{2n,0}$  as  $C_{2n,0}^*$ , a complex  
conjugate of SCH symbol  $S_{2n,0}$  as  $S_{2n,0}^*$ , a complex conjugate of  
said primary CPICH symbol  $C_{2n,1}$  as  $C_{2n,1}^*$  and a complex conjugate  
15 of said SCH symbol  $S_{2n,1}$  as  $S_{2n,1}^*$ ; and

judging step for making judgment whether transmission diversity is present or not depending upon positive or negative of said calculated value.

20 7. A transmission diversity detection method as set forth in claim 6, wherein said calculating step comprises steps of:

deriving said complex conjugate  $C_{2n,0}^*$  of said primary CPICH symbol  $C_{2n,0}$ , a complex conjugate  $S_{2n,0}^*$  of SCH symbol  $S_{2n,0}$ , a complex conjugate  $C_{2n,1}^*$  of said primary CPICH symbol  $C_{2n,1}$  and a complex  
25 conjugate  $S_{2n,1}^*$  of said SCH symbol  $S_{2n,1}$ ;

calculating  $C_{2n,0} \times S_{2n,0}^*$ ,  $C_{2n,0}^* \times S_{2n,0}$  and  $C_{2n,1}^* \times C_{2n,1}$ ; and  
calculating a sum of  $C_{2n,0} \times S_{2n,0}^* + C_{2n,0}^* \times S_{2n,0} + C_{2n,1}^* \times$   
 $C_{2n,1}$ ,

said judging step makes judgment whether transmission  
5 diversity is performed or not depending upon positive or negative  
of sign of said sum.

8. A transmission diversity detection method as set forth  
in claim 6, wherein said predetermined slot is even numbered  
10 slots in one frame, said first and second symbols are (0)th  
and first symbols of said slot.

9. A storage medium storing a program implementing a  
transmission diversity detection method for notifying presence  
15 or absence of a transmission diversity of spread spectrum  
communication by modulation of SCH (Synchronization channel),  
said program comprising:

calculating step for calculating a calculated value of  
 $C_{2n,0} \times S_{2n,0}^* + C_{2n,0}^* \times S_{2n,0} + C_{2n,1}^* \times C_{2n,1}$ , in first and second symbols  
20 in a predetermined number of series of slots with respect to  
a reception signal, taking a primary CPICH (Common pilot channel)  
symbol with respect to said first symbol as  $C_{2n,0}$ , a SCH symbol  
with respect to said first symbol as  $S_{2n,0}$ , a primary CPICH symbol  
with respect to said second symbol as  $C_{2n,1}$  and a SCH symbol with  
25 respect to said second symbol as  $S_{2n,1}$ , and taking a complex

conjugate of said primary CPICH symbol  $C_{2n,0}$  as  $C_{2n,0}^*$ , a complex conjugate of SCH symbol  $S_{2n,0}$  as  $S_{2n,0}^*$ , a complex conjugate of said primary CPICH symbol  $C_{2n,1}$  as  $C_{2n,1}^*$  and a complex conjugate of said SCH symbol  $S_{2n,1}$  as  $S_{2n,1}^*$ ; and

5           judging step for making judgment whether transmission diversity is present or not depending upon positive or negative of said calculated value.

10           10. A storage medium as set forth in claim 9, wherein said calculating step comprises steps of:

deriving said complex conjugate  $C_{2n,0}^*$  of said primary CPICH symbol  $C_{2n,0}$ , a complex conjugate  $S_{2n,0}^*$  of SCH symbol  $S_{2n,0}$ , a complex conjugate  $C_{2n,1}^*$  of said primary CPICH symbol  $C_{2n,1}$  and a complex conjugate  $S_{2n,1}^*$  of said SCH symbol  $S_{2n,1}$ ;

15           calculating  $C_{2n,0} \times S_{2n,0}^*$ ,  $C_{2n,0}^* \times S_{2n,0}$  and  $C_{2n,1}^* \times C_{2n,1}$ ; and  
calculating a sum of  $C_{2n,0} \times S_{2n,0}^* + C_{2n,0}^* \times S_{2n,0} + C_{2n,1}^* \times C_{2n,1}$ ,

20           said judging step makes judgment whether transmission diversity is performed or not depending upon positive or negative of sign of said sum.

25           11. A storage medium as set forth in claim 9, wherein said predetermined slot is even numbered slots in one frame, said first and second symbols are (0)th and first symbols of said slot.